

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of

Revision of Parts 2 and 15 of the
Commission's Rules and the Petition
for Rulemaking to Permit
Unlicensed National Information
Infrastructure Devices to Operate in
the 5.470-5.725 GHz Band

ET Docket No. 03-122

RM-10371

To: The Commission

COMMENTS OF WORKS D'ARNDT

Introduction

Following are comments pertaining to the Rulemaking and previous comments from others concerning the FCC's Petition of Rulemaking ("Petition"). The Petition requests additional spectrum in the 5 GHz band in order to provide additional bandwidth for the public to enjoy the ability to further their wireless networks to enhance educational, medical, business and other services that depend on the freedom of wires. In addition, by continuing to harmonize frequency use, world wide wireless manufacturers can build products for a true global market.

Discussion

By the proposed Rules, the FCC has designed a good LAN (generally indoor, short distance communication) set of specifications; but an extremely weak set of criteria that would be used by the WAN market (outdoor with greater distances). In light that these proposed rules favor low power, highly unconventional and most likely untrustworthy operation (TPC and DFS¹) in the presence of uncertain and uncharacterized interference; this Petition should be considered for indoor type products only. For WAN use, products need to

¹ Additional comments by the WECA board

operate in a manner that permits a higher level of dependability in order to provide a trusted “level of service” to the user and the customer. The FCC proposal that the new frequencies (and those of the current middle U-NII band) incorporate TPC and DFS. This directive will not guarantee a communication link that can sustain high levels of consistent throughput without interruption. ISPs and other higher level users of Part 15 products, require a “level of service” that can be managed and trusted to operate at a service level of 95% or better 24/7.

The proposals outlined in this Petition can be reserved for LANs and for those products that serve the lower distance level of service (and to harmonize products and frequencies that are shared among countries). To better understand the products necessary for the WAN market and the need for future frequencies to better serve **this** expanding market, the following further discusses the technical and operational features that are necessary.

There are wireless Ethernet products that are available and in use today that incorporate the following:

- 1) Higher power (either 15.247 Rules, or the upper U-NII 15.407 Rules)
- 2) Built-in spectrum analyzer (or a form of predetermining open “channels”)

To further advance and support the WAN market, required is:

- A) Freedom to deploy without undue restrictions to specific interference

Details:

- 1) The spread spectrum Rules (15.247) allow for an initial higher power level and a managed e.i.r.p. that favors higher gain antennas to maximize distance and minimize off-azimuth interference. Even the U-NII rules (15.407), for the high band (5725-5825 MHz) with their relatively lower e.i.r.p. restrictions, still permit the use of long distance communications for point-to-point links and reasonably long distances for point-to-multipoint high-capacity deployments. It is these Rules which have produced a significant ISP business with the ability to offer high speed Internet at a cost savings and reliability rivaling the common carriers. These Rules have produced cost effective products and a healthy WAN service provider market. Many others would like to see the FCC provide new spectrum and Rules for those frequencies that permit and grow this market segment.

2) Because the Part 15 bands are shared frequencies that are regarded as unlicensed, there has to be a certain level of product operation viability. For example, the ability to determine where there are already nearby users as well as deal with the general uncertainty of interference in the day-to-day operation of providing continuous dependable bandwidth to the user/customer. There are products in use today that incorporate a “poor man’s spectrum analyzer” to provide an initial set of criteria to consider a new frequency in a particular area or direction. By using the product’s ability to “listen” by receiving and recording the noise level in a slow sequence that looks at the whole available band in small sections at a time. This process provides the implementer with a means to determine, before starting to transmit in a particular direction, whether there is a low enough noise floor (and whether it stays that way over time in that or more frequency segments) in order to dependably deploy a new point-to-point or point-to-multipoint link. This process works better and more reliably than DFS in that the chosen channel stays where it is set unless bit/frame errors start occurring at an unacceptable level. When this happens, a new weighted rescan is taken and a determination made whether the problem is equipment related, interference from one of your own links, or a new unknown source. If another channel is shown to be acceptable, the base transceiver and its CPEs (customer premise equipment) are programmed within minutes to move together to the new spot in the band. This type of managed and purposeful frequency change is what is necessary to provide a dependable level of service to the paying and important end user. Unlike DFS where a RADAR hit or company/product X causes company/product Y to shift frequency, thereby causing company Z to likewise move and start an uncontrollable set of product-chasing. All started for the wrong reason (hardware malfunction or a simple stray RADAR-like signal). Or worse, a hand-held device to looks like RADAR interference which purposely causes an upset to the whole network (like getting a virus). This event, due to the uncertainty of DFS technical requirements, would look and respond at a level unacceptable to the WAN market. With DFS and TPC in place, these Petition Rules dictate an indoor product and not one that can be trusted for quality service in the WAN market.

A) The NEW frequency block for WAN expansion should be below 9 GHz and offer bandwidth and power levels in line with the particular frequency. Again, the gain of the antenna should play an important roll in variable e.i.r.p. allowances based on beam width. Today, the typical

enterprise wants a minimum of a T1 speed (~1.5 Mbps) and typically less than 2-3 more T1s of Internet connection speed (3-5 Mbps) for the higher scale company/user. There are those companies that require much greater connection speed, but those speeds (DS-3 or similar and higher) are better served by higher priced and much more reliable connections than those used and proposed with unlicensed (Part 15) products.

For those users, bandwidth that can be managed like licensed bands/products, would be needed. Here would be frequencies that are coordinated in urban areas and offer a higher level of protection from interference. This higher level of protection would of course come at a higher price, but these frequencies would be reserved for very high capacity users and the reliable backbones necessary to carry lower bandwidth, lower cost unlicensed connections. Right now, in many urban areas, there are few 23 and 18 GHz spaces available. We would like to see more offerings and more relaxed Rules to provide lower cost, high capacity with minimal interference bands for new products.

The right product in the right market

In rural areas, the need for coordination and especially the need for DFS/TPC is not required and there should be a way to not have it in a product or be able to turn it off. Here the products can take on different aspects and should not have their operation dictated by the rare and occasional interferer or the need to add costly features that may never be utilized. The assumption that technology (mostly or by itself) can solve problems, is the wrong tack to maximize market potential. Lately, the LAN market and its manufacturers have missed the “last-mile” agenda. Getting the bandwidth to the business, to the community and in the “last-mile” is what allows the products that will be created by this Petition and future Rulemakings. The Rules need to support “getting the bandwidth to the LAN devices” and not lose sight of the need to cost-effectively move the higher dependable bandwidth where it can be deployed to the desk top. When it comes to product “features” and the frequencies it operates in, it is the pay-back or short and long range financial decisions which determine what is used in the backbone, the “last-mile” and then to the desktop or mobile user.

In Summary:

To respectfully request the FCC to consider this proposed rulemaking to outline only those products and their operation to the indoor market or for very

short range use. In this regard, the need to have or to use DFS and/or TPC may be considered in a much less demanding role. Additionally, to encourage and propose rulemakings that promotes the WAN market along with even more built-in transceiver software tools. These enhanced tools would allow for the managed ability to make deliberate frequency/network changes and not rely on products to make automatic and therefore more problematic choices.

We also respectfully request that the current U-NII Rules remain unchanged.

Sincerely,

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